



17 July 2020

Connected Farms submission on the exposure draft of Radiocommunications Legislation Amendment (Reform and Modernisation) Bill

Connected Farms Pty Ltd, an Australian company and Licenced Telecommunications Carrier provides connectivity solutions to the rural agriculture sector and enables digital agriculture in three key aspects:

1. Improved business grade broadband to the farm office/ house
2. Mobile quality coverage over the farmland to allow improved voice and data communications (and this coverage can also collect IoT data).
3. Regional / local edge micro datacentres – to reduce latency in autonomous applications and allow better near farm data processing of all the various data sources such as IoT sensors.

Connected Farms welcomes the broad stated aims of the proposed amendments to improve flexibility and reduce regulatory barriers, helping ensure the framework remains fit for purpose in a rapidly changing environment.

A fit for purpose regulatory framework that better reflects modern spectrum and supply chain needs is of critical importance for Australia’s economic and social well-being. Connected Farms is concerned to ensure that the framework has the appropriate settings to encourage investment and innovation **equally** across metropolitan and rural/remote areas and that it is equipped to respond changes in demand.

Demand for spectrum and connected communications solutions for rural/remote farms and business has and will further increase so any proposed reforms in spectrum management must have regard to the unique challenges and opportunities in rural/remote areas and provide flexible regulatory settings and adaptive responses.

Connected Farms response to this consultation paper is focused primarily on Question 6:

“Are there any additional reforms the Department should consider as part of the proposed amendments to the Act, or that should be considered further as part of future reforms to the spectrum management framework”

There are spectrum management reforms needed in rural/remote communications to remove barriers to market entry and incentivise investment opportunities in connectivity to support the Agriculture Industry and enable growth in sectors such as AgTech and Data Management, particularly over farms. These include:

1. Spectrum solutions for regional/remote coverage
2. Spectrum availability for private LTE networks and equipment/vendor supply issues
3. Availability of 600MHz
4. Spectrum hoarding and ‘use it or lose it’ spectrum sharing solutions regional/remote areas - aimed at maximising competition in the market and ensuring that finite waterfront spectrum resource does not sit unused while a business case and market can be made for this by other operators.
5. Proposed spectrum sharing fee

SPECTRUM SOLUTIONS

1. Spectrum solutions for rural/remote communications. While the limited availability of 1800MHz and 2GHz spectrum for private LTE is welcome (*1800MHz—3GPP Band 3, available for Public Telecommunication Services (PTS) licences authorising FDD systems in Remote Australia. Assignment priorities apply. 2 GHz—3GPP Band 1, available for PTS licences authorising FDD systems in Remote Australia in the top 2 x 20 MHz Regional & Remote Australia in the bottom 2 x 40 MHz Assignment priorities apply*) this is not an ideal solution for covering regional and remote Australia. At these frequencies the link budgets are inferior to spectrum which is much more suitable for remote installations such as in the 700MHz spectrum however this waterfront spectrum is tied up with allocations purchased by mobile network operators (MNOs) on a national coverage basis even though it is clear that in remote and in many regional areas these MNOs have no desire or commercial intent to deploy network.

SPECTRUM AVAILABILITY

2. The lack of available spectrum for LTE networks is severely impairing the development and use of private LTE which is becoming essential as a foundation technology enabler as Industry 4.0 develops in regional and remote based industries. Examples are the effective use of autonomous plant in mining and also the adoption of AgTech in agriculture. This is unique to remote and regional Australia where coverage requirements are likely to be larger than other industry 4.0 private LTE systems as would be deployed in a factory or similar urban workplace. By their very remote nature the areas where private LTE coverage is required are in effect “walled garden” that could be seen as small pockets of isolated coverage provided for specific purposes and would not be close enough to or powerful enough to create any interference issues.

The work by the ACMA so far indicated that 1500MHz spectrum is being considered for use for private LTE. This range is unsuitable due to the very limited nature of equipment availability and vendor choice.

AVAILABILITY OF 600MHz SPECTRUM

3. The use of 600MHz spectrum and also TV white space in private LTE over remote and regional areas should be given some priority. Any auction allocations for MNOs in the 600MHz band should be contained to urban areas.

SPECTRUM HOARDING

4. Spectrum Sharing – while this is in theory supported, the practical reality is that it is uncommon in the Australian market as MNOs are not supportive of sharing any of their waterfront spectrum holdings – even in remote areas. Connected Farms considers that minimum use levels should be mandated for remote and regional areas particularly in the 700MHz range to allow for effective private LTE networks to be deployed. This will support mining, agriculture, water management and indigenous services while aiding an effective layer of emergency contact capability.

PROPOSED SPECTRUM SHARING FEE

5. It is acknowledged that the MNOs paid for this spectrum and it would not be expected to be shared for free, however Connected Farms is of the view that a “use it or lose it” rule should be created for all spectrum that would allow the ACMA to re-allocate spectrum if an operator refused to share where it is clear they have no plans to use this.

Connected Farms proposes the following steps to maximise the use of spectrum and sharing solutions:

- i. The ACMA be given the role of active spectrum manager with power to administer all sharing requests and allocations
- ii. All requests to share must be made by Licenced Telecommunications Carriers only.
- iii. On a request to use a particular part of spectrum (possible an LTE band) by a Licenced Telecommunications Carrier the ACMA formally asks the spectrum holding MNO for their specific plans for spectrum in that geographic area and the MNO has 7 days to provide them (these must be real plans that show a commitment to using the spectrum within the next 24 months showing tower locations, coverage lots and a written commitment that the expenditure has been approved and will proceed) Penalties to apply for not responding honestly with rejected sharing applications checked at the end of 24 months and the MNO to show it did in fact deploy coverage to that area
- iv. If the MNO has no coverage plans for that geographic area the Licenced Telecommunications Carrier is given a sub-licence transfer for the specific geographic area and is invoiced the Sharing Spectrum Fee (see below) and has 6 months to build the network and show that it has been built and is in operation.
- v. Sharing Spectrum Fee – as the MNOs paid for the spectrum on a national or geographical area basis it is fair that they should be compensated for this. The fairest way to do this would be as an average of the geographical area the spectrum is needed for compared to the Australian land area (or whatever the original spectrum geographic location was) and the forecast number of subscribers to be serviced compared to the national population of Australia (or whatever the population of the original spectrum geographic area was). This would need to be factored for the remaining duration of the spectrum allocation.
- vi. Example of Sharing Spectrum calculation: A Licenced Carrier needs to deploy 5Mhz of 700 Mhz in a privateLTE network that is 300 sq Km and will service 50 subscribers. Looking at the “Digital Dividend” auction that ended in May 2013 we can extrapolate of the total bandwidth for 700 and 2500 spectrum that for 5Mhz lots Optus paid \$81,141,770 and Telstra paid \$81,376,202 and given the time remaining is 10 years of 15 years this reduces the current values to \$54,094,514 and \$54,250,801 respectively. Now the required are is 300sq km and Australia is 7.692million sq km so the factor for area is $300/7,692\text{million} = 0.000039$ and the subscribers are 50 and the general population is 25 million so $50/25\text{million} = 0.000002$. The average factoring would therefore be $(0.000039+0.000002)/2 = 0.0000205$ so the Spectrum Sharing fee would be: If it was Optus = $0.0000205 \times 54,094,514 = \1108.94 and if it were Telstra it would be \$1112.14. These would be one-off payments to fairly compensate the MNOs the spectrum was shared from.